



babcock & wilcox
technical services clinch river

767 boeing road oak ridge, tn 37830 usa
www.babcock.com

2008 MAY 12 PM 3:59

May 7, 2008

Mr. John Trimmer
State of Tennessee
Division of Air Pollution Control
9th Floor, L & C Annex
401 Church Street
Nashville, TN 37243-1531

01-0236
61977

Re: Submittal of Forms APC-20, -21, and -22 for Proposed Metal Turning

Dear Mr. Trimmer:

Babcock & Wilcox Technical Services Clinch River, LLC, (B&W CR), 767 Boeing Road, Oak Ridge, TN, intends to initiate metal turning operations in June 2008. We understand these operations to be specifically exempt from air permitting under Tennessee Rule 1200-3-9-.04(d)18. In order to receive an official determination from the Tennessee Division of Air Pollution Control (APC), we are submitting APC forms and an application fee as recommended by Mr. Travis Blake during a telephone conversation on April 17, 2008.

Planned operations will involve 26 metal turning machines that use cutting fluid consisting of 92% water and 8% non-hazardous coolant (either Hocut[®] 795-B or Trim[®] VHP[®]) that will be recirculated within a closed system. Each machine will be fitted with a mist eliminator to help control emissions.

Attachments 1, 2, and 3 provide APC forms 20, 21, and 22, respectively. Data sheets for the two proposed coolants are in Attachment 4. Attachment 5 provides engineering calculations for estimating oil emissions from the metal turning operations when using the ChipBlaster[®] MistBlaster[®] mist eliminator.

If you have any questions during your review, please contact the undersigned at (865) 241-7317.

Sincerely,

Michael G. Knight
Manager, ES&H and Performance Assurance

Attachments

Attachment 1
APC-20 for Metal Turning



NOT TO BE USED FOR TITLE V APPLICATIONS

PERMIT APPLICATION

2008 MAY 12 PM 3: 59

APC 20

PLEASE TYPE OR PRINT AND SUBMIT IN DUPLICATE FOR EACH EMISSION SOURCE. ATTACH APPROPRIATE SOURCE DESCRIPTION FORMS.

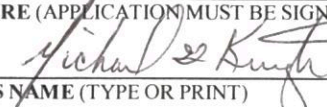
1. ORGANIZATION'S LEGAL NAME Babcock & Wilcox Technical Services Clinch River LLC			/// FOR	APC COMPANY-POINT NO. 01-0236-02
2. MAILING ADDRESS (ST/RD/P.O. BOX) 767 Boeing Road			/// APC	APC LOG/PERMIT NO. 61977
CITY Oak Ridge	STATE TN	ZIP CODE 37830	PHONE WITH AREA CODE 865-241-7317	
3. PRINCIPAL TECHNICAL CONTACT Gary Pitcher			PHONE WITH AREA CODE 865-241-7010	
4. SITE ADDRESS (ST/RD/HWY) 767 Boeing Road			COUNTY NAME Anderson	
CITY OR DISTANCE TO NEAREST TOWN Oak Ridge		ZIP CODE 37830	PHONE WITH AREA CODE 865-241-7317	
5. EMISSION SOURCE NO. (NUMBER WHICH UNIQUELY IDENTIFIES THIS SOURCE)		PERMIT RENEWAL YES () NO (X)		
6. BRIEF DESCRIPTION OF EMISSION SOURCE				

Operation of horizontal lathes and vertical milling machines for precision machining of metal (primarily aluminum). Machines will use nonhazardous cutting fluids and have mist eliminators installed, which collect cutting fluid from the vapors emitted during metal turning and separate it for reuse as coolant within an essentially closed system.

7. TYPE OF PERMIT REQUESTED				
CONSTRUCTION (X)	STARTING DATE 01/02/2008r	COMPLETION DATE 07/31/2008	LAST PERMIT NUMBER	EMISSION SOURCE REFERENCE NUMBER
OPERATING ()	DATE CONSTRUCTION STARTED	DATE COMPLETED	LAST PERMIT NUMBER	EMISSION SOURCE REFERENCE NUMBER
LOCATION TRANSFER ()	TRANSFER DATE		LAST PERMIT NUMBER	EMISSION SOURCE REFERENCE NUMBER
ADDRESS OF LAST LOCATION				

8. DESCRIBE CHANGES THAT HAVE BEEN MADE TO THIS EQUIPMENT OR OPERATION SINCE THE LAST CONSTRUCTION OR OPERATING PERMIT APPLICATION.

All equipment is to be installed new—never operated.

9. SIGNATURE (APPLICATION MUST BE SIGNED BEFORE IT WILL BE PROCESSED) 		DATE 5-7-08
10. SIGNER'S NAME (TYPE OR PRINT) Michael G. Knight	TITLE Manager ES&H and Performance Assurance	PHONE WITH AREA CODE (865) 241-7317

(OVER)

TABLE OF POLLUTION REDUCTION DEVICE OR METHOD CODES
(ALPHABETICAL LISTING)

NOTE: FOR CYCLONES, SETTLING CHAMBERS, WET SCRUBBERS, AND ELECTROSTATIC PRECIPITATORS. THE EFFICIENCY RANGES CORRESPOND TO THE FOLLOWING PERCENTAGES:

HIGH: 95-99+%. MEDIUM: 80-95%. AND LOW: LESS THAN 80%.

IF THE SYSTEM HAS SEVERAL PIECES OF CONNECTED CONTROL EQUIPMENT, INDICATE THE SEQUENCE, FOR EXAMPLE:

008'010.97%.

IF NONE OF THE BELOW CODES FIT, USE 999 AS A CODE FOR OTHER AND SPECIFY IN THE COMMENTS.

NO EQUIPMENT	000	LIMESTONE INJECTION--DRY	041
ACTIVATED CARBON ADSORPTION	048	LIMESTONE INJECTION--WET	042
AFTERBURNER--DIRECT FLAME	021	LIQUID FILTRATION SYSTEM	049
AFTERBURNER--DIRECT FLAME WITH HEAT EXCHANGER	022	MIST ELIMINATOR--HIGH VELOCITY	014
AFTERBURNER--CATALYTIC	019	MIST ELIMINATOR--LOW VELOCITY	015
AFTERBURNER--CATALYTIC WITH HEAT EXCHANGER	020	PROCESS CHANGE	046
ALKALIZED ALUMINA	040	PROCESS ENCLOSED	054
CATALYTIC OXIDATION--FLUE GAS DESULFURIZATION	039	PROCESS GAS RECOVERY	060
CYCLONE--HIGH EFFICIENCY	007	SETTLING CHAMBER--HIGH EFFICIENCY	004
CYCLONE--MEDIUM EFFICIENCY	008	SETTLING CHAMBER--MEDIUM EFFICIENCY	005
CYCLONE--LOW EFFICIENCY	009	SETTLING CHAMBER--LOW EFFICIENCY	006
DUST SUPPRESSION BY CHEMICAL STABILIZERS		SPRAY TOWER (GASEOUS CONTROL ONLY)	052
OR WETTING AGENTS	062	SULFURIC ACID PLANT--CONTACT PROCESS	043
ELECTROSTATIC PRECIPITATOR--HIGH EFFICIENCY	010	SULFURIC ACID PLANT--DOUBLE CONTACT PROCESS	044
ELECTROSTATIC PRECIPITATOR--MEDIUM EFFICIENCY	011	SULFUR PLANT	045
ELECTROSTATIC PRECIPITATOR--LOW EFFICIENCY	012	VAPOR RECOVERY SYSTEM (INCLUDING CONDENSERS,	
FABRIC FILTER--HIGH TEMPERATURE	016	HOODING AND OTHER ENCLOSURES)	047
FABRIC FILTER--MEDIUM TEMPERATURE	017	VENTURI SCRUBBER (GASEOUS CONTROL ONLY)	053
FABRIC FILTER--LOW TEMPERATURE	018	WET SCRUBBER--HIGH EFFICIENCY	001
FABRIC FILTER--METAL SCREENS (COTTON GINS)	059	WET SCRUBBER--MEDIUM EFFICIENCY	002
FLARING	023	WET SCRUBBER--LOW EFFICIENCY	003
GAS ADSORPTION COLUMN--PACKED	050	WET SUPPRESSION BY WATER SPRAYS	061
GAS ADSORPTION COLUMN--TRAY TYPE	051		
GAS SCRUBBER (GENERAL: NOT CLASSIFIED)	013		

TABLE OF EMISSION ESTIMATION METHOD CODES

NOT APPLICABLE EMISSIONS ARE KNOWN TO BE ZERO	0
EMISSIONS BASED ON SOURCE TESTING	1
EMISSIONS BASED ON MATERIAL BALANCE USING ENGINEERING EXPERTISE AND KNOWLEDGE OF PROCESS	2
EMISSIONS CALCULATED USING EMISSION FACTORS FROM EPA PUBLICATION NO. AP-42 COMPILATION OF	
AIR POLLUTANT EMISSIONS FACTORS	3
JUDGEMENT	4
EMISSIONS CALCULATED USING A SPECIAL EMISSION FACTOR DIFFERING FROM THAT IN AP-42	5
OTHER (SPECIFY IN COMMENTS)	6

Attachment 2
APC-21 for Metal Turning



NOT TO BE USED FOR TITLE V APPLICATIONS

PROCESS OR FUEL BURNING SOURCE DESCRIPTION

APC21(& 24)

PLEASE TYPE OR PRINT, SUBMIT IN DUPLICATE AND ATTACH TO THE PERMIT APPLICATION.

1. ORGANIZATION NAME Babcock & Wilcox Technical Services Clinch River LLC	/// FOR	APC COMPANY-POINT NO.
2. EMISSION SOURCE NO. (AS ON PERMIT APPLICATION)	SIC CODE	/// APC
3. DESCRIPTION OF PROCESS OR FUEL BURNING UNIT		

4.

Operation of horizontal lathes and vertical milling machines for precision machining of metal (primarily aluminum). Machines will use nonhazardous cutting fluids and have mist eliminators installed, which collect cutting fluid from the vapors emitted during metal turning and separate it for reuse as coolant within an essentially closed system.

4. NORMAL OPERATION: Please see Item 13.	HOURS/DAY 8	DAYS/WEEK 5	WEEKS/YEAR 50	DAYS/YEAR
5. PERCENT ANNUAL THROUGHPUT: →	DEC.-FEB. 25%	MARCH-MAY 25%	JUNE-AUG. 25%	SEPT.-NOV. 25%

6. TYPE OF PERMIT APPLICATION	(CHECK BELOW ONE ONLY)
PROCESS SOURCE: APPLY FOR A SEPARATE PERMIT FOR EACH SOURCE. (CHECK AT RIGHT, AND COMPLETE LINES 7, 8, 13, AND 14).	(X)
PROCESS SOURCE WITH IN-PROCESS FUEL: PRODUCTS OF COMBUSTION CONTACT MATERIALS HEATED. APPLY FOR A SEPARATE PERMIT FOR EACH SOURCE. (CHECK AT RIGHT, AND COMPLETE LINES 7, 8, AND 10 THROUGH 14)	()
NON-PROCESS FUEL BURNING SOURCE: PRODUCTS OF COMBUSTION DO NOT CONTACT MATERIALS HEATED. COMPLETE THIS FORM FOR EACH BOILER OR FUEL BURNER AND COMPLETE AN EMISSION POINT DESCRIPTION FORM (APC 22) FOR EACH STACK. (CHECK AT RIGHT, AND COMPLETE LINES 9 TO 14)	()

7. TYPE OF OPERATION: CONTINUOUS, (X)	BATCH ()	NORMAL BATCH TIME	NORMAL BATCHES/DAY
---------------------------------------	-----------	-------------------	--------------------

8. PROCESS MATERIAL INPUTS AND IN-PROCESS SOLID FUELS	DIAGRAM* REFERENCE	INPUT RATES (POUNDS/HOUR)		/	(FOR APC USE ONLY) SCC CODE
		DESIGN	ACTUAL	/	
A. Nonhazardous coolant (e.g., Hocut 795B or Trim VHP E320 coolant)	See Item 13.	See Item 13.	See Item 13.	/	
B. Metal stock (primarily aluminum).	See Item 13.	See Item 13.	See Item 13.	/	
C.				/	
D.				/	
E.				/	
F.				/	
G.				/	
TOTALS				/	

* A SIMPLE PROCESS FLOW DIAGRAM MUST BE ATTACHED.

(OVER)

9. BOILER OR BURNER DATA: (COMPLETE LINES 9 TO 14 USING A SEPARATE FORM FOR EACH BOILER) Not applicable					
BOILER NUMBER	STACK NUMBER**	TYPE OF FIRING***	RATED BOILER HORSEPOWER	RATED INPUT CAPACITY (10 ⁶ BTU/HR)	OTHER BOILER RATING (SPECIFY CAPACITY AND UNITS)
BOILER SERIAL NO.		DATE CONSTRUCTED	DATE OF LAST MODIFICATION (EXPLAIN IN COMMENTS BELOW).		

** BOILERS WITH A COMMON STACK WILL HAVE THE SAME STACK NUMBER.

*** CYCLONE, SPREADER (WITH OR WITHOUT REINJECTION), PULVERIZED (WET OR DRY BOTTOM, WITH OR WITHOUT REINJECTION), OTHER STOKER (SPECIFY TYPE), HAND FIRED, AUTOMATIC, OR OTHER TYPE (DESCRIBE BELOW IN COMMENTS).

10. FUEL DATA: (COMPLETE FOR A PROCESS SOURCE WITH IN-PROCESS FUEL OR A NON-PROCESS FUEL BURNING SOURCE) Not applicable

PRIMARY FUEL TYPE (SPECIFY)				STANDBY FUEL TYPE(S) (SPECIFY)				
FUELS USED	ANNUAL USAGE	HOURLY USAGE		%	%	BTU VALUE OF FUEL		(FOR APC ONLY) SCC CODE
		DESIGN	AVERAGE	SULFUR	ASH			
NATURAL GAS:	10 ⁶ CUFT	CUFT	CUFT	///	///			
#2 FUEL OIL:	10 ³ GAL	GAL	GAL	///	///			
#5 FUEL OIL:	10 ³ GAL	GAL	GAL	///	///			
#6 FUEL OIL:	10 ³ GAL	GAL	GAL	///	///			
COAL:	TONS	LBS	LBS					
WOOD:	TONS	LBS	LBS	///	///			
LIQUID PROPANE:	10 ³ GAL	GAL	GAL	///	///			
OTHER (,SPECIFY TYPE & UNITS,):								

11. IF WOOD IS USED AS A FUEL, SPECIFY TYPES AND ESTIMATE PERCENT BY WEIGHT OF BARK


12. IF WOOD IS USED WITH OTHER FUELS, SPECIFY PERCENT BY WEIGHT OF WOOD CHARGED TO THE BURNER.

13. COMMENTS

Item 4: Operating Hours: Initially turning operations will be during one shift, which is 8 hours per day, 5 days per week for 50 weeks per year. There will be a move to 3 shifts per day at 8 hours per shift, 5 days per week for 50 weeks per year.

Item 8: Due to the simplicity, no diagram is provided for these metal turning operations. Each machine will produce precision parts from a varying amount of metal stock and will use a mixture of 92% water and 8% non-hazardous cutting fluid as a coolant. The coolant will be separated from the mist emanating from the metal turning by a Chip Blaster[®] MistBlaster[®] which is expected to remove all visible mist from the machine exhaust.

14. SIGNATURE
Michael G. Knight



DATE

5-7-08

Attachment 3
APC-22 for Metal Turning



NOT TO BE USED FOR TITLE V APPLICATIONS

EMISSION POINT DESCRIPTION

APC 22

PLEASE TYPE OR PRINT AND SUBMIT IN DUPLICATE FOR EACH STACK OR EMISSION POINT.
ATTACH TO THE PERMIT APPLICATION.

1. ORGANIZATION NAME				///	APC COMPANY POINT NO.	
Babcock & Wilcox Technical Services Clinch River, LLC				FOR		
2. EMISSION SOURCE NO. (FROM APPLICATION) METAL TURNING		FLOW DIAGRAM POINT NUMBER		///	APC SEQUENCE NO.	
				APC		
3. LOCATION:	LATITUDE 36 deg 00 min 30 sec N →	LONGITUDE 84 deg 14 min 00 sec W	UTM VERTICAL		UTM HORIZONTAL	
4. BRIEF EMISSION POINT DESCRIPTION (ATTACH A SKETCH IF APPROPRIATE): Chip Blasters™ mist eliminator on horizontal lathes and milling machines for metal turning operations.					DISTANCE TO NEAREST PROPERTY LINE (FT)	
COMPLETE LINES 5 AND 6 IF DIFFERENT FROM THAT ON THE PROCESS OR FUEL BURNING SOURCE DESCRIPTION (APC 21)						
5. NORMAL OPERATION:	HOURS/DAY	DAYS/WEEK	WEEK/YEAR		DAYS/YEAR	
6. PERCENT ANNUAL THROUGHPUT: →	DEC.-FEB.	MARCH-MAY	JUNE-AUG.		SEPT.-NOV.	
7. STACK OR EMISSION POINT DATA:	HEIGHT ABOVE GRADE (FT)	DIAMETER (FT)	TEMPERATURE (°F)	% OF TIME OVER 125°F	DIRECTION OF EXIT (UP, DOWN OR HORIZONTAL)	
DATA AT EXIT CONDITIONS: →	FLOW (ACTUAL FT ³ /MIN.)	VELOCITY (FT/SEC)	MOISTURE (GRAINS/FT ³)		MOISTURE (PERCENT)	
DATA AT STANDARD CONDITIONS:	FLOW (DRY STD. FT ³ /MIN)	VELOCITY (FT/SEC)	MOISTURE (GRAINS/FT ³)		MOISTURE (PERCENT)	
8. AIR CONTAMINANTS	ACTUAL EMISSIONS			EMISSIONS* EST. METHOD	CONTROL DEVICES*	CONTROL EFFICIENCY%
	EMISSIONS (LBS/HR) AVERAGE MAXIMUM		CONCENTRATION			
PARTICULATES	Not applicable		**			
SULFUR DIOXIDE	Not applicable		***			
CARBON MONOXIDE	Not applicable		PPM			
ORGANIC COMPOUNDS	Not applicable		PPM			
NITROGEN OXIDES	Not applicable		PPM			
FLUORIDES	Not applicable					
OTHER(SPECIFY) Oil Mist	0.1	0.1		2	015	
OTHER(SPECIFY)						

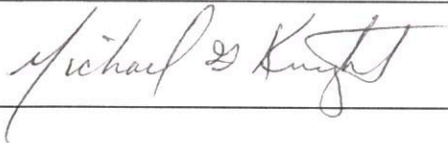
(OVER)

9. CHECK TYPES OF MONITORING AND RECORDING INSTRUMENTS THAT ARE ATTACHED:

Not applicable

OPACITY MONITOR (), SO₂ MONITOR (), NOX MONITOR (), OTHER (SPECIFY IN COMMENTS) ()**10. COMMENTS****11. SIGNATURE**

Michael G. Knight

**DATE**

5-7-08

* REFER TO THE BACK OF THE PERMIT APPLICATION FORM FOR ESTIMATION METHOD AND CONTROL DEVICE CODES.

** EXIT GAS PARTICULATE CONCENTRATION UNITS: PROCESS — GRAINS/DRY STANDARD FT³ (70°F); WOOD FIRED BOILERS — GRAINS/DRY STANDARD FT³ (70°F); ALL OTHER BOILERS — LBS/MILLION BTU HEAT INPUT.

*** EXIT GAS SULFUR DIOXIDE CONCENTRATIONS UNITS: PROCESS — PPM BY VOLUME, DRY BASES; BOILERS — LBS/MILLION BTU HEAT INPUT.

Attachment 4
Product Data Sheets for Proposed Cutting Fluids:
HOCUT 795B and Trim VHP E320

PRODUCT DATA

HOCUT® 795-B

HEAVY-DUTY MACHINING AND GRINDING FLUID FOR USE WITH ALL METALS INCLUDING AUTOMOTIVE GRADE CAST ALUMINUMS

Many of today's modern machine shops require the use of one coolant capable of working in many applications on a wide variety of metals. **HOCUT 795-B** is such a product. Its versatility can be demonstrated by machines and metals on which it can be used. These include Kingsburys, Bullards, bar machines, lathes, chuckers, centerless and cylindrical grinders. Whether you are cutting high or low carbon steels, alloy steels such as 4130 and 4140; cast iron, nodular iron and gray iron; 300 and 400 series stainless steel, **HOCUT 795-B** is the choice. It is especially suitable when machining automotive and aerospace grade aluminum alloys.

HOCUT 795-B is formulated with a combination of ingredients that provide a greater resistance to microbial degradation of the fluid.

Field tests have shown that the synergies of the components in this product will reduce the frequency of sumpside additions of antimicrobial agents.

HOCUT 795-B is compatible with hard water, is clean running and biostable, which assures long, odour-free sump life. It provides corrosion protection without staining and affords good lubrication for machine ways and indexing mechanisms. Low foaming characteristics make **HOCUT 795-B** an excellent choice for gun drilling and other high pressure applications.



HOUGHTON CANADA INC.

P.O. Box 113, Station "D"
100 Symes Rd.
Toronto, Ontario M6P 3J5
Ph (416) 763-4691 Fx (416) 763-3167
www.houghton.ca

PRODUCT DATA SHEET
HOCUT 795-B

PAGE 2 of 3

FEATURES

- Clean running/low foam
- Excellent corrosion protection
- Excellent machining capabilities

BENEFITS

- Reduced disposal cost/less time/operator acceptance
- In-process protection of machinery and parts
- Increased tool life; improves surface finish

TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Neat
5% Emulsion

Amber fluid
Whitish emulsion

pH at 5%

9.5

Specific Gravity

0.961

RECOMMENDED USE CONCENTRATION

Machining

10:1 to 20:1

Grinding

20:1 to 25:1

CONCENTRATION CHECKS

The refractometer factor for **HOCUT 795-B** is 1.1 Multiply the, refractometer reading by this factor to obtain the emulsion concentration in percent.

SHELF LIFE

Under normal conditions, the recommended shelf life for **HOCUT 795-B** is six (6) months.

SHIPPING INFORMATION

HOCUT 795-B is shipped in 205 line steel drums and in bulk.

SHIPPING CLASSIFICATION

Metal Cutting and Drawing Compound

STORAGE / HANDLING I DISPOSABILITY

No health or safety hazards exist when **HOCUT 795-B** is stored, used and disposed of in accordance with the Material Safety Data Sheet for this product.

WARRANTY

The information given here is considered to be correct and is offered for your consideration, investigation and verification. No warranties are expressed or implied since the use of our products is beyond our control. Statements concerning the use of Houghton products are not to be construed as recommending the infringement of any patent.

February 20, 2004

MATERIAL SAFETY DATA SHEET
TRIM® VHP® E320

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name TRIM® VHP® E320

Material type Cutting and Grinding Fluid Concentrate

Classification/synonym(s) Chemical emulsion/soluble oil

Product use Coolant and lubricant in metal removal processes

Manufacturer address MASTER CHEMICAL CORPORATION
501 West Boundary
Perrysburg, OH 43551-1200

Emergency telephone 419-874-7902 **Fax number** 419-874-0684

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOM.	CAS #	%RANGE
Severely hydrotreated petroleum oil	5mg/m ³ (mist)	5mg/m ³ (mist)	none	64742-52-5	55-65
Triethanolamine	none	5mg/m ³	none	102-71-6	1-10

The exact chemical identities and percentages of the raw materials used in TRIM® VHP® E320 are trade secrets. This information is being withheld as provided for in the Occupational Safety and Health Administration's Hazard Communication Rule (29 CFR 1910.1200).

3. HAZARDS IDENTIFICATION

Emergency overview Olive green liquid
No immediate hazard
Fire may produce oxides of carbon, nitrogen, sulfur

POTENTIAL HEALTH EFFECTS

Acute effects of overexposure	Eye Contact	Nonirritant
	Skin Contact	Possible defatting, sensitizing properties
	Inhalation	Nontoxic
	Ingestion	Nontoxic
	Skin Absorption	Nontoxic

**Chronic effects of
overexposure** None currently known

Product/Ingredients listed as carcinogen or potential carcinogen?	NTP Annual Report No	IARC Monographs No
	OSHA No	

Signs and symptoms of exposure	None
Medical conditions generally aggravated by exposure	None known

4. FIRST AID MEASURES

Emergency and first aid procedures	Eyes	Flush immediately with cool, clean water for at least 15 minutes
	Skin	Wash with mild soap and warm water
	Inhalation	Move to fresh air
	Ingestion	If large quantities are ingested, contact a physician

In every case get medical attention as required

5. FIRE FIGHTING MEASURES

Flash point (test method)	331° F (166° C) (COC)	Flammable limits Not determined
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Extinguishing media	As appropriate for the surrounding fire: water (flood with water), dry chemical, CO ₂ or "alcohol" foam
---------------------	--

Special fire fighting procedures	None	Unusual fire and explosion hazards None
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6. ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled	Mop up or use dry absorbent
--	-----------------------------

7. HANDLING AND STORAGE

Precautions to be taken in handling and storing	Avoid contact with eyes. Avoid prolonged or repeated skin contact with the concentrate. Wash thoroughly after handling. Do not swallow. Refer to container labels.
---	--

Other precautions	This product contains amine. Do not add nitrite or other nitrosating agents to this product due to the potential for nitrosamine formation.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection (Specify type)	None
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Ventilation	Local exhaust	Not normally required
	Mechanical (General)	General room ventilation should be sufficient
	Special	None
	Other	None

Protective gloves	Chemical resistant
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Other protective equipment	None
Eye protection	Safety glasses
Exposure limits	None established by ACGIH or OSHA for product as whole Refer to Section 2

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Olive green liquid
Odor Mild, oily	
pH of concentrate (as range)	8.2 – 8.6
Typical operating pH (as range)	8.2 – 8.9
Boiling point (ASTM D86)	209° F (98° C)
Freezing point	5° F (-15° C)
Solubility in water	100%
Specific gravity (H₂O=1)	0.955
VOC Content (EPA Method 24)	1.427 lbs/gal
Evaporation rate (butyl acetate=1)	<0.001

10. STABILITY AND REACTIVITY

Stability	Stable	Conditions to avoid	None
Incompatibility (materials to avoid)	Strong acids and oxidizers		
Hazardous combustion or decomposition products	Thermal decomposition (fire) may produce oxides of carbon, nitrogen, sulfur		
Hazardous polymerization	Will not occur	Conditions to avoid	None

11. TOXICOLOGICAL INFORMATION

Study	Test Animal	Concentrate	Results	10% Solution
Acute inhalation toxicity	Rat	--		nontoxic LC ₅₀ > 198 mg/l
Acute oral toxicity	Rat	nontoxic LD ₅₀ > 5g/kg		nontoxic
Acute dermal toxicity	Rabbit	nontoxic LD ₅₀ > 2g/kg		nontoxic
Primary skin irritation	Rabbit	irritant PDI index = 5.51		nonirritant PDI index = 1.83
Primary eye irritation	Rabbit	nonirritant		nonirritant
Repeated insult Patch	Human volunteers	--		sensitizing properties

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Waste disposal method Must comply with local, state, and federal regulations. If pre-treatment is needed, chemical treatment or ultrafiltration may be used. Contact Master Chemical Tech Line (1-800-537-3365) for assistance.

14. TRANSPORT INFORMATION

Department of Transportation **DOT Hazard Class:** None
TRIM® VHP® E320 is not classified as a hazardous material by DOT.

15. REGULATORY INFORMATION

Resource Conservation and Recovery Act **EPA Hazardous Waste Number(s):** None
TRIM® VHP® E320 is not classified as a hazardous waste by EPA.

Toxic Substances Control Act All TRIM® VHP® E320 ingredients are listed on the TSCA Inventory of Chemical Substances.

Superfund Amendments and Reauthorization Act of 1986 TRIM® VHP® E320 does not contain any Section 302/304 Extremely Hazardous Substances or Section 313 Toxic Chemicals.

16. OTHER INFORMATION

	HMIS Hazard Index		NFPA RATING
		Concentrate	
(Health)	H = 1		H = 1
(Fire)	F = 0		F = 0
(Reactivity)	R = 0		R = 0
(Personal Protection)	PP = A (safety glasses)		Special hazards = none
		Typical Working Solution	
	H = 1		H = 1
	F = 0		F = 0
	R = 0		R = 0
	PP = A (safety glasses)		Special hazards = none

Key 0 = minimal 1 = slight 2 = moderate 3 = serious 4 = severe
This information is intended solely for the use of individuals trained in the particular system.

TRIM® and VHP® are registered trademarks of Master Chemical Corporation.
(C) 1993 Master Chemical Corporation.

The information herein is given in good faith and believed current as of the date of this MSDS. Because conditions of use are beyond our control, no guarantee, representation or warranty expressed or implied is made. Consult Master Chemical Corporation for further information.

Attachment 5
Estimate for Oil Emissions Including
Product Data Sheet for Proposed Mist Eliminator

April 18, 2008

P:\2008 Correspondence\Air Permit\Estimate of Oil Mist Emission.doc

To: Jill A Mortimer [Via E-Mail]
cc: Mike Knight Gary Pitcher
Subject: Engineering Estimate of Oil Mist Emissions at **B&W CR**

Attached are calculations to support that oil mist emission from metal turning operations at **B&W CR** is approximately **0.1** pounds per hour.

Data:

Number of Machine Tools Using Coolant: ≈ 26

Control Device: *Mist Blaster* [see page 2]

Air Flow per Mist Blaster: ≈ 1200 cfm

Estimate Of Oil Mist Concentration In Exhaust Air From Mist Blaster:

Oil mist emission from the *Mist Blasters* is estimated to be ≤ 1 mg/m³.

Rationale for this estimate is that the exhausts from *Mist Blasters* have no visible oil mist [See pages 3-6].

Calculations:

Total Exhaust Air Flow: [26 machines] X [1200 ft³/minute/machine] X [60 minutes/hour] = 1.87×10^6 ft³ per hour

Concentration of oil mist: [1 mg/m³] X [1 gram/1000mg] X [1lb/ 454grams] x [1m³/35.315 ft³] = 6.24×10^{-8} pounds/ft³

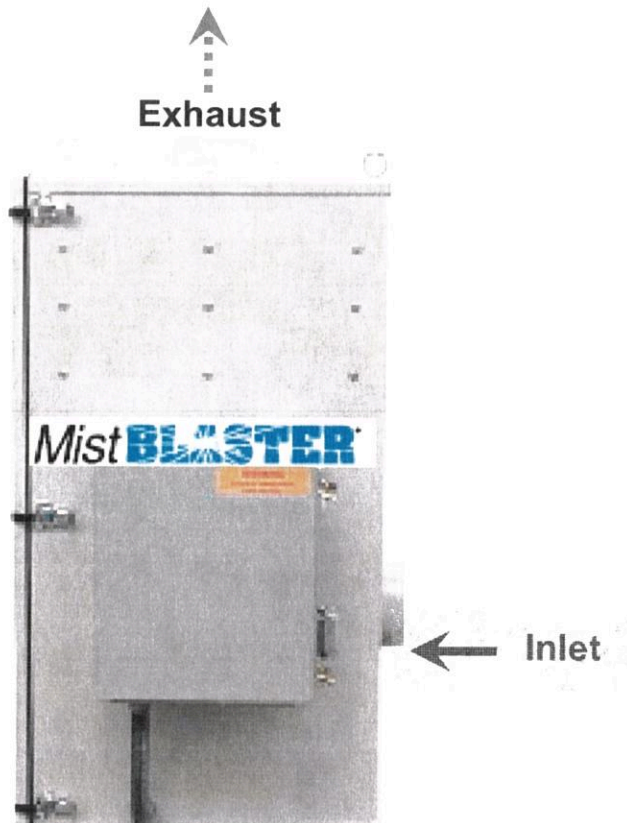
Pounds of oil mist per hour: [6.24×10^{-8} pound/ft³] X [1.87×10^6 ft³ per hour] = **0.12** pounds/hour

Round to one significant figure: **0.1** pounds per hour



Stephen R. Coover, Ph.D.

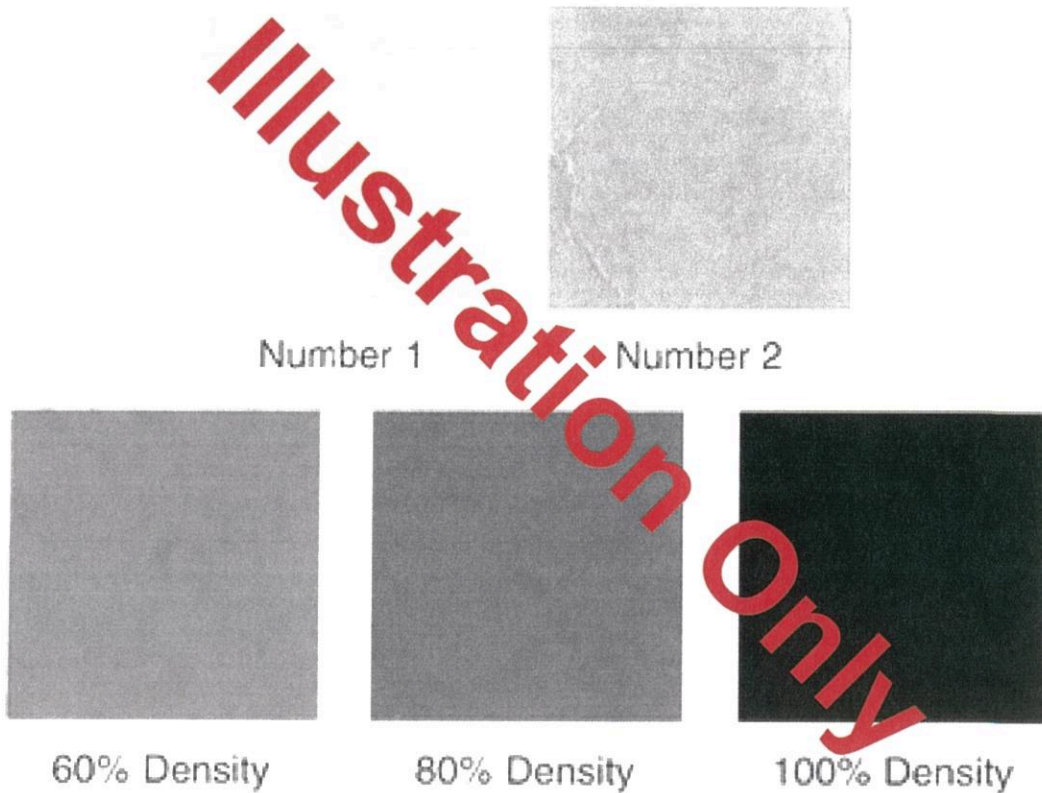
Mist Blaster



Chip BLASTER[®]	
Mist BLASTER	
Max CFM	1200
Amperage	5 Amps @ 240VAC
Remote Location	Yes
Liquid Return	Yes
Air Quality	Outstanding
Weight	225 lbs.

Estimate of Oil Mist Concentration by Observation of Opacity

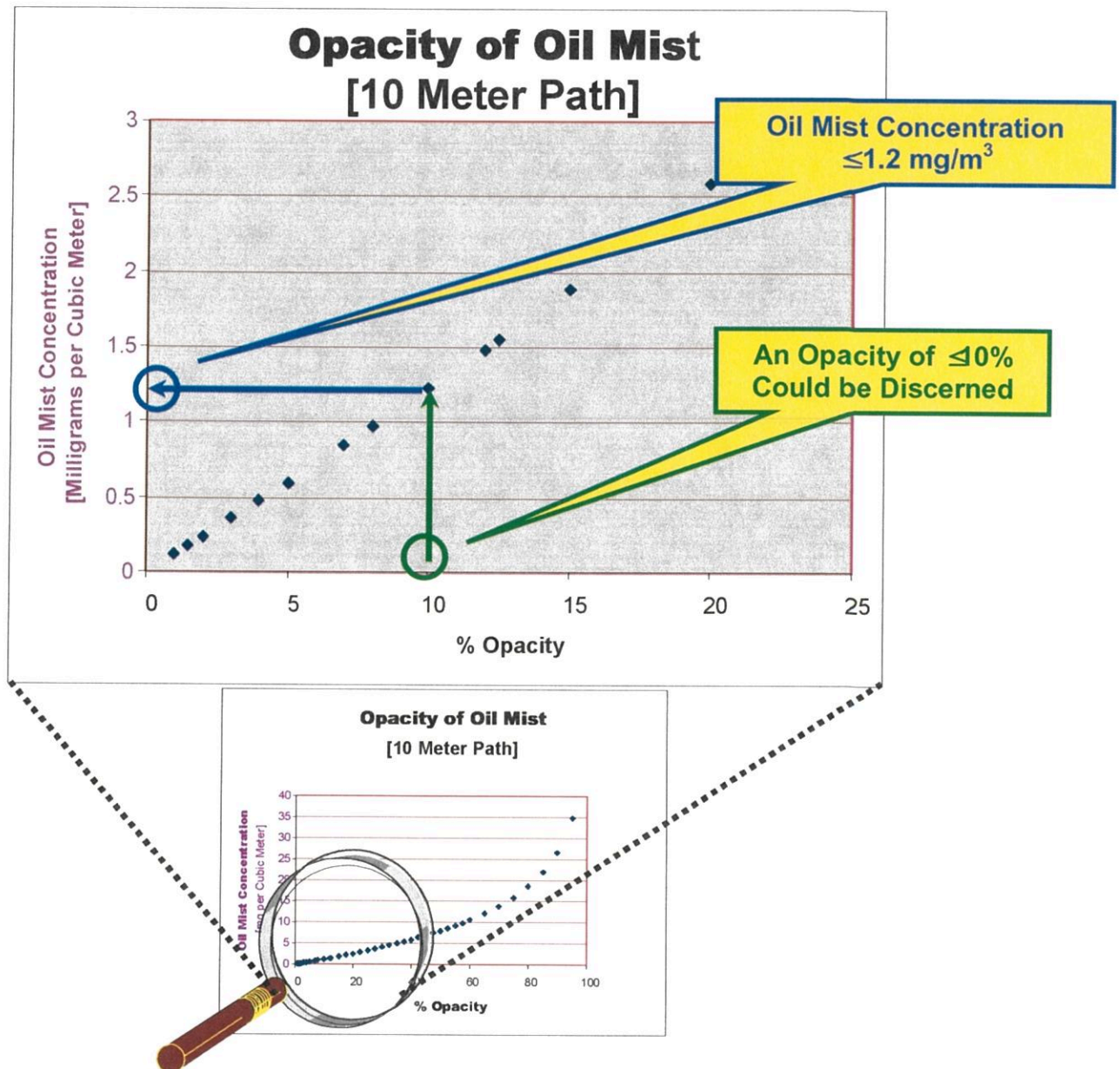
RINGELMAN CHARTs are a series of charts numbered from 0 to 5, that simulate various smoke densities, by presenting different percentages of black. A Ringelman No. 1 is equivalent to 20% black. A Ringelman No. 5 is 100 percent. They are used for measuring the opacity of smoke rising from stacks and other sources, by matching with the actual effluent, the various numbers or densities, indicated by the charts. Ringelman numbers were sometimes used in setting emission standards.



Comparative Density Chart

Opacity of Oil Mist

Reference: <http://www.dieselnet.com/calculator/smoke1.html>



Observations in the **B&W CR** Developmental Machine Shop found no visible oil mist being exhausted from a *Mist Blaster*. As the sight path was ≈ 10 meters and an opacity of $\leq 0\%$ could be discerned, it was concluded that the oil mist was $< 1 \text{ mg/m}^3$. Such an emission is well under the OSHA PEL of 5 mg/m^3 [See page 5]. This upper limit for oil mist emission is also consistent with measurements made by the *National Institute for*

Occupational Safety and Health [NIOSH] at the Oak Ridge facility [See excerpt from Health Hazard Evaluation Report 99-0177-2828 on page 6]

Oil Mist Exposure Limits

* OSHA PEL

The current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for mineral oil mist is 5 milligrams per cubic meter (mg/m³) of air as an 8-hour time-weighted average (TWA) concentration [29 CFR 1910.1000, Table Z-1].

* NIOSH REL

The National Institute for Occupational Safety and Health (NIOSH) has established a recommended exposure limit (REL) for mineral oil mist of 5 mg/m³ as a TWA for up to a 10-hour workday and a 40-hour workweek and 10 mg/m³ as a 15-minute TWA short-term exposure limit (STEL). A STEL is the maximum 15-minute concentration to which workers may be exposed during any 15-minute period of the working day [NIOSH 1992].

* ACGIH TLV

The American Conference of Governmental Industrial Hygienists (ACGIH) has assigned mineral oil mist a threshold limit value (TLV) of 5 mg/m³ as a TWA for a normal 8-hour workday and a 40-hour workweek and a short-term exposure limit (STEL) of 10 mg/m³ for periods not to exceed 15 minutes. Exposures at the STEL concentration should not be repeated more than four times a day and



Health Hazard Evaluation Report 99-0177-2828

Boeing Commercial Airplane Group

Oak Ridge, Tennessee

February 2001

<http://www.cdc.gov/niosh/hhe/reports/pdfs/1999-0177-2828.pdf>

SUMMARY

On April 14, 1999, the National Institute for Occupational Safety and Health (NIOSH) received a request for a health hazard evaluation (HHE) from three persons employed at the Boeing Commercial Airplane Group parts manufacturing plant in Oak Ridge, Tennessee. The requesters listed several health effects, including respiratory conditions and skin, kidney, bladder, and prostate problems that they believed were related to exposure to the synthetic metal-working fluid (MWF) used in the machine shop. NIOSH investigators made three site visits to the Boeing facility to evaluate MWF exposures and employees' health concerns. The exposure assessment included measurements of MWF aerosol and triethanolamine (TEA) exposures, real-time measurements of aerosol exposures, and a microbial characterization of MWF. Because four machinists had been newly diagnosed with asthma in 1998, medical evaluations focused on respiratory effects. The medical evaluation included questionnaires, lung function surveys, and serial peak flow testing on participants determined to have bronchial hyperresponsiveness during the pulmonary function testing.

MWF exposures were measured on 55 workers, representing both machinists and a comparison group of assembly workers. With one exception, all personal exposure values were below the NIOSH Recommended Exposure Limit (REL) of 0.4 milligrams per cubic meter (mg/m³). The geometric mean (GM) exposures for 42 samples collected on machinists was 0.07 mg/m³ (geometric standard deviation [GSD], 2.1 mg/m³). Mass concentrations were significantly lower for workers in the comparison area, 0.02 mg/m³ (GSD, 2.7 mg/m³). All TEA exposures were well below the 5 mg/m³ American



Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV).